A CLINICAL STUDY

OF

ECTROPION AND ENTROPION

Regional Institute of Ophthalmology &
Government Ophthalmic Hospital
Madras Medical College
Chennai

Dissertation Submitted to

THE TAMILNADU DR. MGR MEDICAL UNIVERSITY
CHENNAI,INDIA

M.S.DEGREE EXAMINATION
BRANCH III OPHTHALMOLOGY

MARCH 2006

CERTIFICATE

This is to certify that **Dr. K. Vasumathi, M.S.,** Post Graduate student in Ophthalmology, Regional Institute of Ophthalmology, Govt. Ophthalmic Hospital, attached to Chennai Medical College, Chennai, carried out this Dissertation titled, **"A CLINICAL STUDY OF ECTROPION AND ENTROPION"** by herself under my guidance and direct supervision, during the period, July 2003 – September 2006. This dissertation is submitted to the Tamil Nadu Dr. MGR Medical University, Chennai in partial fulfillment of the award of M.S. Degree in Ophthalmology**.**

Prof. T. Selvakumari, M.S.D.O.,
Director and Superintendent
Regional Institute of Ophthalmology
Govt. Ophthalmic Hospital
Egmore, Chennai – 600 008.

Date:
Place:

ACKNOWLEDGEMENT

I express my sincere thanks to **Prof.Kalavathi Ponniraivan, B.Sc., M.D., Dean, Madras Medical College**, Chennai for permitting me to conduct this study.

I am indebted and thankful to **Prof. T.Selvakumari, M.S., D.O., Director, RIO – GOH,** for providing me with all the necessary facilities and guidance to enable me to complete my study.

My sincere thanks to **Prof. M.Radha Krishnan, M.S., D.O.,** my unit chief and guide for his valuable advice, guidance, support and encouragement throughout my course.

I express my profound thanks to **Dr.V.Revathi, M.S, D.O., and Dr.M.V.Prakash, M.S., D.O.,** for their constant help and timely advice for this study.

My special thanks to all the unit chiefs and assistants for their valuable help and co-operation.

Last but not the least, I thank all my patients for their co-operation without whom this study would not have been possible.

CONTENTS

INTRODUCTION

The eye is one of the delicate organs in the body. It is situated within the bony orbit and is protected by the walls of the orbit. The eyelids are the important structures that protect the eyeball apart from the orbit. The eyelid malpositions are of a common occurrence now a days. Meticulous repair of these malpositions is essential for restoration of eyelid form and function. A detailed knowledge of the eyelid anatomy is essential for the surgeon to be able to achieve a good repair. Various surgical modalities are available for the correction of the eyelid malpositions such as ectropion and entropion. We shall have a overview of the eyelid anatomy and its malpositions in this thesis work.

ANATOMY OF THE EYELID

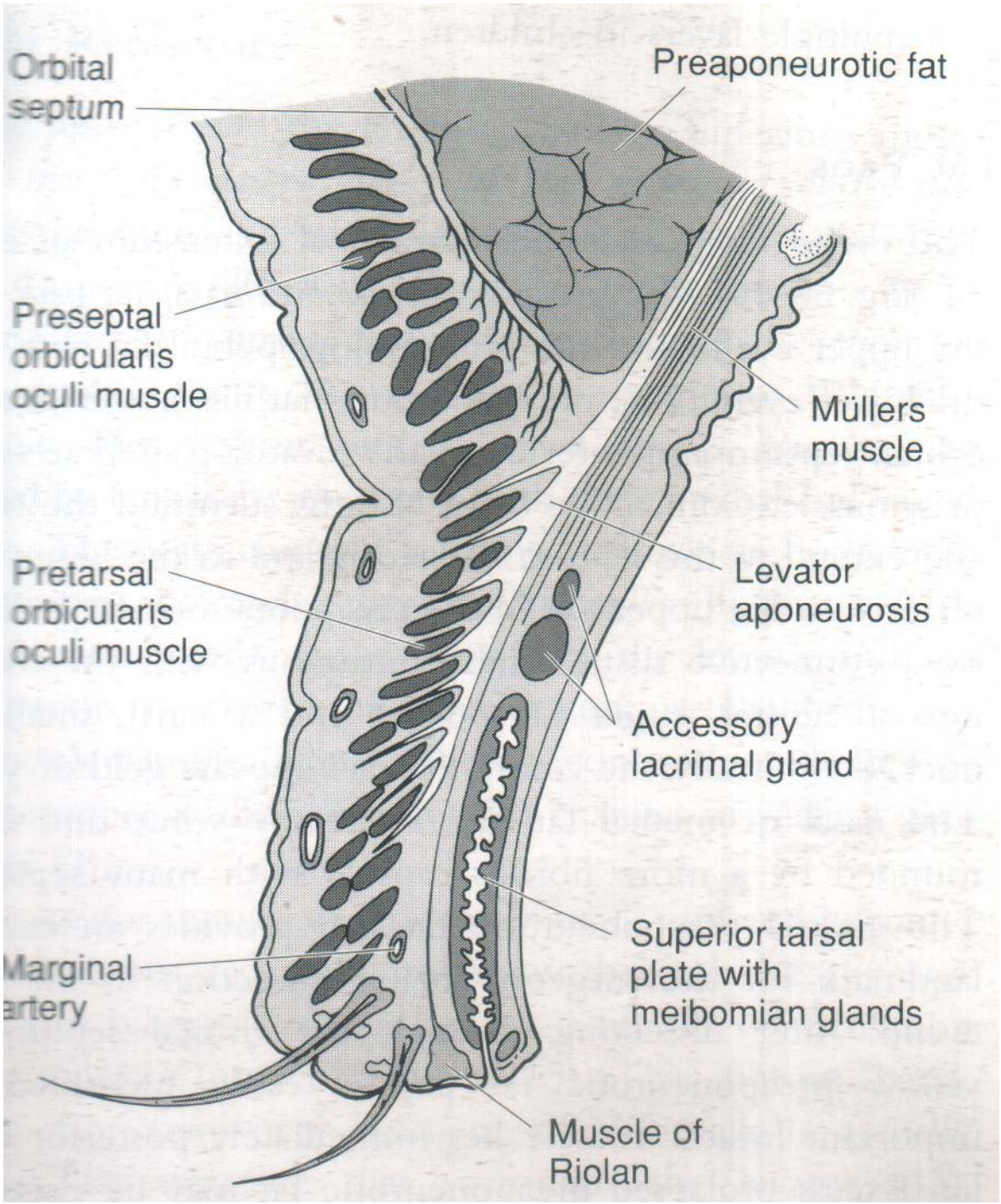
Eyelid can be divided into the following eight anatomical segments from the dermal surface inward:

- Skin
- Subcutaneous tissue
- Muscles of protraction
- Orbital septum
- Orbital fat
- Muscles of Retraction
- Tarsus
- Conjunctiva

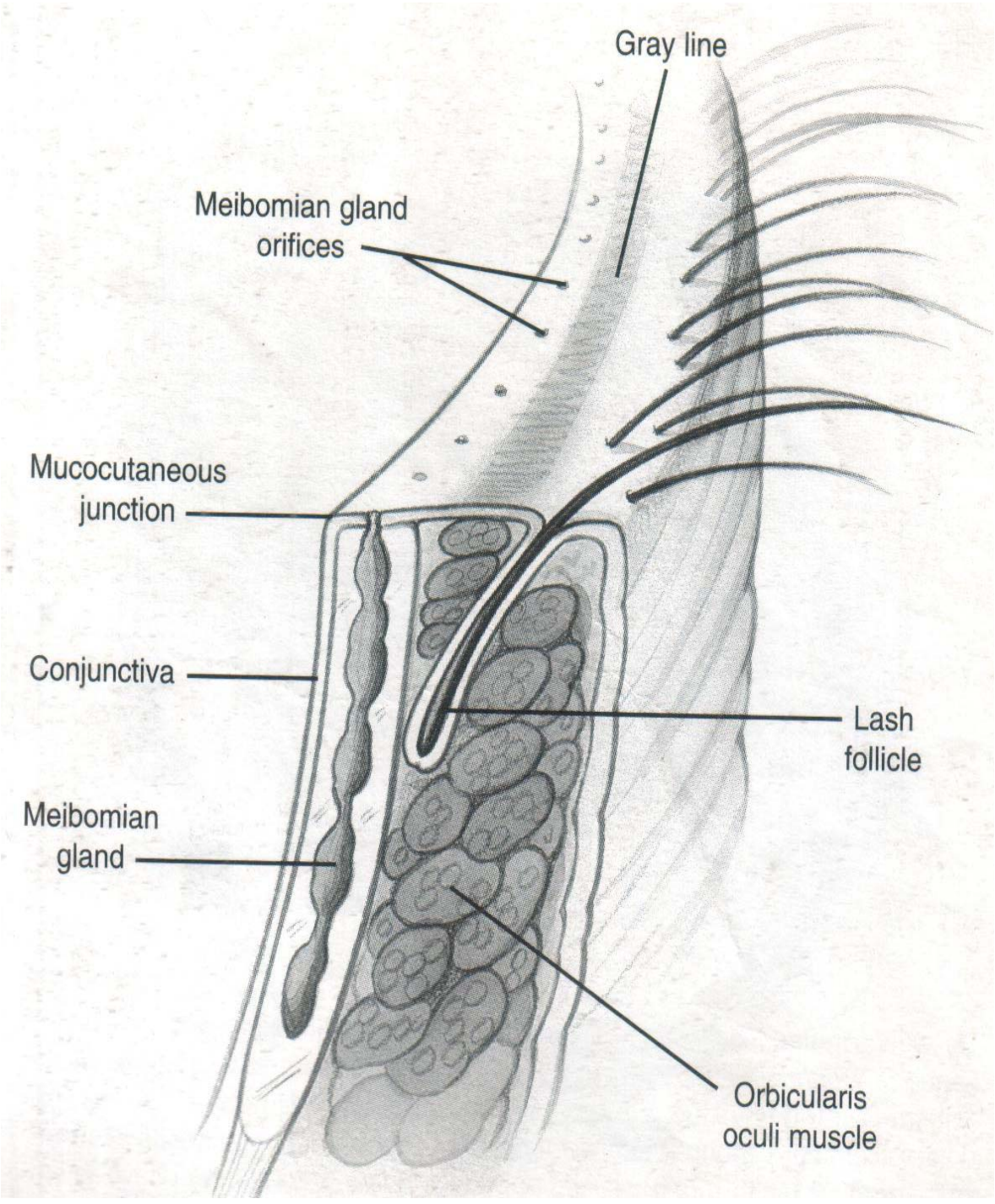
TOPOGRAPHY:

The palpebral fissure is the opening between the upper and lower eyelids. The palpebral fissure measures 10 to 12mm in vertical height. In the primary position the upper eyelid margin rests at the corneal limbus in the child and rests 1.5 to 2.0mm below the limbus in the adult. The lower-eyelid position is more variable, but it usually rests at the inferior corneal limbus.

SAGITTAL VIEW OF THE UPPER LID



EYE LID MARGIN ANATOMY



SKIN:

Skin of the eyelids is the thinnest in the body. It contains the usual adnexal structures:- fine hairs, sebaceous glands and sweat glands. An eyelid fold is usually present near the upper border of the tarsus, where the levator establishes its first insertional attachments. Upper eyelid crease approximates the attachments of the levator aponeurosis to the pretarsal orbicularis bundles and skin.

MARGIN:

The eyelid margin contains several important landmarks. A small opening or punctum from the canaliculus exits at the summit of each lacrimal papilla. The upper punctum, normally hidden by slight internal rotation, is located more medially. The lower punctum is usually apposed to the globe and not normally evident unless the eyelid is everted.

Along the entire length of the free margin of the eyelid is a delicate pigmented line so called gray line or inter marginal sulcus. The eyelashes, or cilia arise anterior to this line. Posterior to the line are the the openings of the tarsal, or meibomian glands. The mucocutaneous border occurs at the level of the orifices of the meibomian glands. There are some 30-40 meibomian gland orifices in a single row in the upper eyelid but only 20-30 similar openings in

the lower. The gray line corresponds histologically to the most superficial portion of the orbicularis muscle, the muscle of Riolan.

The eyelashes are arranged in two or three irregular rows along the anterior dermal edge of the eyelid margin. They are usually longer and more numerous on the upper than the lowerlid. The margins contain the glands of Zeiss, holocrine glands associated with the cilia and the glands of Holl, which are apocrine glands of the skin.

SUBCUTANEOUS CONNECTIVE TISSUE:

The peculiarity of this in the eyelid is that it contains no fat.

PROTRACTORS:

Orbicularis oculi muscle is the main protractor of the eyelid. It is divided into palpebral and orbital parts. Palpebral part is more involved in involuntary eyelid movements (blink), while the orbital portion is primarily involved in forced eyelid closure (winking and blepharospasm).

The pretarsal part – arises from deep origin at posterior lacrimal crest and superficial origin at the anterior limb of the medial canthal tendon (MCT). Deep head of pretarsal muscle (Horner’s tensor tarsi), a localised bundle of pretarsal orbicularis, encircles both canaliculi to facilitate tear drainage.

The upper and lower eyelid segments of the pretarsal orbicularis fuse in the lateral canthal area to become the lateral canthal tendon.

The preseptal part has deep origins from the fascia around the lacrimal sac and the posterior lacrimal crest. Superficial origins arise from the anterior limb of MCT. Laterally, the preseptal muscles from the lateral palpebral raphe is overlying the lateral orbital rim. The orbital portion arise from the anterior limb of the MCT and surrounding periosteum. These fibres course over the zygoma, covering the elevator muscles of the lip. It is supplied by VII (facial N) cranial nerve. The preseptal and orbital orbicularis muscle fibres override the pretarsal orbicularis in forced closure of the eyelids. In contrast, unforced closure or blinking occurs with contraction of the pretarsal and preseptal orbicularis fibres. Poor orbicularis muscle tone in the region may contribute to ectropion and epiphora.

ORBITAL SEPTUM:

It is a multi layered sheet of fibrous tissue, arising from the periosteum over the superior and inferior orbital rims at the arcus marginalis. In the upper eyelids it fuses with the levator aponeurosis, 2-5 mm above the superior tarsal border. In the lower eyelid it fuses with the capsulopalpebral fascia at or just below the inferior tarsal border. It inserts on both the anterior and posterior tarsal surfaces as well as the tapered inferior border of the tarsus. It serves as a

barrier between orbit and eyelid to limit the spread of infection and haemorrhage. The septum may become attenuated with age, which permits the upper eyelid preaponeurotic fat and the lower-eyelid fat to herniate anteriorly.

ORBITAL FAT:

Normally, it lies posterior to the orbital septum and anterior to the LPS. The central orbital fat pad is an important landmark in both elective eyelid surgery and eyelid laceration repairs since it lies directly behind the orbital septum and in front of the levator aponeurosis.

RETRACTORS:

UPPER EYELID

Levator muscle with its aponeurosis and the Muller's Muscle. LPS originates in the apex of the orbit from the periorbita of the lesser wing of sphenoid just above the annulus of Zinn. Muscular portion is 40mm long and the aponeurosis is 14-20 mm long. The superior transverse ligament (Whitnall's lig) is a condensation of elastic fibres of the anterior sheath of the levator muscle located in the area of transition from levator muscle to aponeurosis, which is composed of collagen and elastic fibers. It functions primarily as a suspensory support for the upper eyelid and the superior orbital tissues. It also acts as a fulcrum for the levator, transferring its vector force

from an antero-posterior to a supero-inferior direction. As the LPS continues towards the tarsus, it divides into an anterior and posterior portion, a variable distance above the superior tarsal border. Anterior portion inserts into the septa between the pretarsal orbicularis orbital muscle bundles. The upper eyelid crease is formed by the most superior of these attachments and by the contraction of the underlying levator complex. The upper eyelid fold is created by the overhanging skin and orbicularis muscle superior to the crease. The posterior portion of the levator aponeurosis inserts firmly onto the anterior surface of the lower half of the tarsus. The lateral horn of the levator aponeurosis is strong, and it divides the lacrimal gland into orbital and palpebral lobes attaching firmly to the orbital tubercle. The medial horn of the aponeurosis is more delicate and forms loose connective attachments to the posterior aspect of the posterior lacrimal crest. Muller's muscle originates at the level of the Whitnall's ligament, 12-14 mm above the upper tarsal margin, extends inferiorly, to insert along the upper eyelid superior tarsal margin. The peripheral arterial arcade is found between the levator aponeurosis and Muller's muscle just above the superior tarsal border.

LOWER LID:

Capsulopalpebral head originates from the terminal muscle fibers of the inferior rectus. It divides as it encircles the inferior oblique muscle and fuses

with its sheath. Anterior to the inferior oblique muscle, the two portions of the capsulopalpebral head joins to form Lockwood's suspensory ligament. It extends anteriorly and sends strands to the inferior conjunctival fornix and inserts on to the inferior tarsal border. Just at or below the tarsus, the orbital septum fuses with the fascial layer. The inferior tarsal muscle is poorly developed and runs posterior to the capsulopalpebral fascia.

TARSUS:

The tarsi are firm, dense plates of connective tissue that serve as the skeleton of the eyelids. Upper eyelid tarsal plate measures 10-12 mm vertically in the centre of the eyelid. Lower eyelid tarsal plate measures 4mm. The tarsal plates have rigid attachments to the periosteum medially and laterally. Both of them are 1 mm thick and taper at the medial and lateral ends. Length of each plate is 29mm. Meibomian glands are situated within the tarsal plates in parallel rows oriented vertically.

CONJUNCTIVA:

The palpebral conjunctiva is a transparent vascularised membrane covered by a non-keratinized epithelium that lines the inner surface of the eyelids. It contains the mucin-secreting goblet cells and the accessory lacrimal glands of Krause and Wolfring.

Thus the eyelid can be divided into the anterior lamella consisting of the skin, subcutaneous tissue, muscles of protraction and retraction and the posterior lamella consisting of the tarsus and the conjunctiva.

CANTHAL TENDONS:

The configuration of the palpebral fissure is maintained by the medial and lateral canthal tendons in conjunction with the attached tarsal plates.

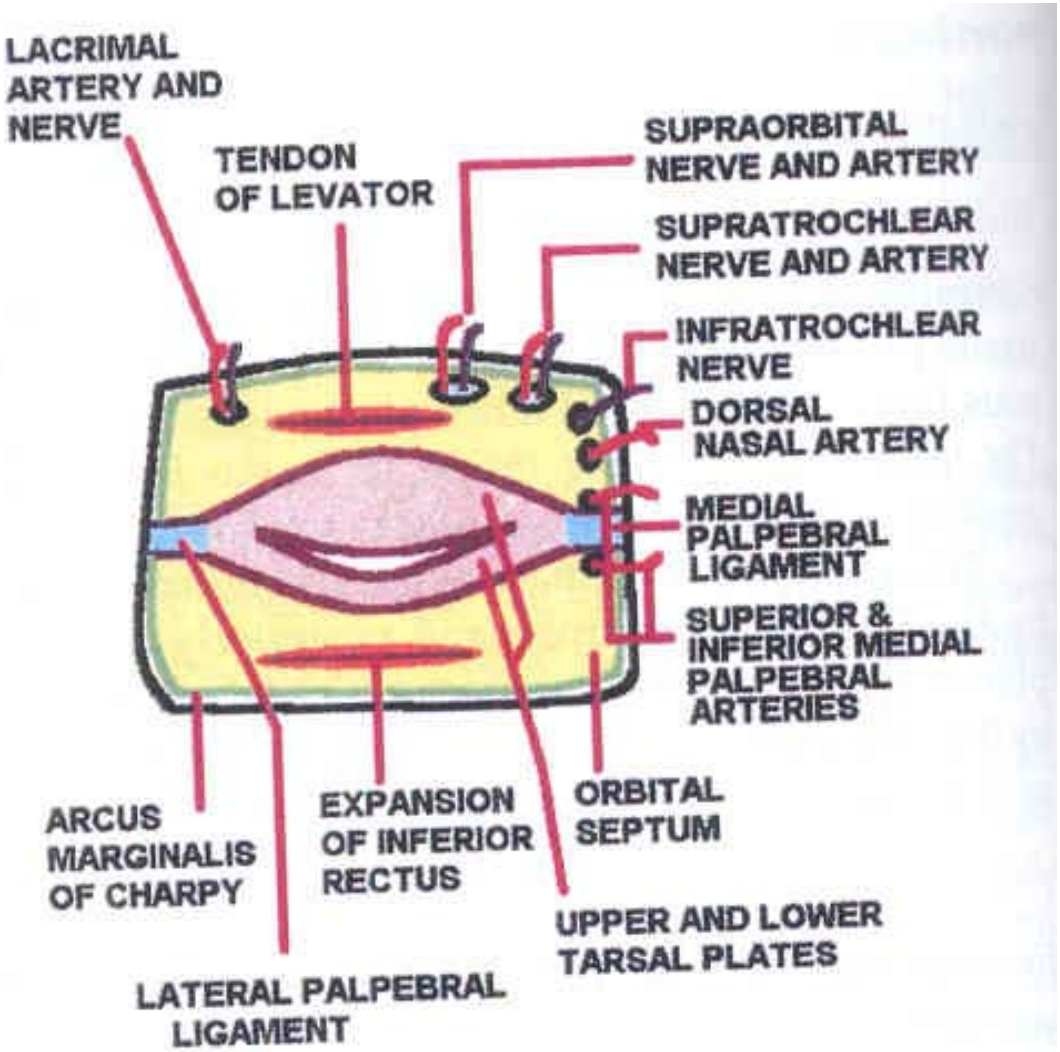
MEDIAL CANTHAL TENDON (MCT)

The two origins of MCT from the anterior and posterior lacrimal crests fuse temporal to the lacrimal sac and again split into an upper limb and a lower limb that attach to the upper and lower tarsal plates. Attachment to anterior lacrimal crest is diffuse and strong where as that to the posterior lacrimal crest is more delicate but very important in maintaining apposition of the eyelid to the globe, allowing the puncta to lie in the tear lake.

LATERAL CANTHAL TENDON (LCT)

The LCT attaches to the lateral orbital tubercle on the inner aspect of the orbital rim, it splits into superior and inferior branches that attach to the respective tarsal plates. The LCT inserts 2mm higher than does the MCT,

Fibrous Support of the Lid



giving the horizontal palpebral fissure an upwards slope medial to lateral. The ligaments become lax with aging and contribute to involutional ectropion and entropion as well as to the symptoms of floppy eyelid syndrome.

VASCULAR SUPPLY:

The extensive vascularity of the eyelid promotes healing and aids in the defence against infection.

Arterial supply:

1. Lateral palpebral – from lacrimal artery
2. Medial palpebral arteries – from ophthalmic artery.

These arteries form the marginal arterial arcade that is located 3mm from the free border of the eyelid just above the ciliary follicles between tarsus and the orbicularis oculi, and a smaller peripheral arcade which runs along the upper margin of the upper tarsal plate.There also occurs anastamosis with the arteries of the face.

VENOUS DRAINAGE:

1. Pre tarsal – Superficial – Angular vein medially and superficial temporal vein laterally.
2. Post tarsal – orbital vein and deeper branches of anterior facial vein and pterygoid plexus, then it drains into the Cavernous sinus.

LYMPHATIC DRAINAGE:

Medial 1/3rd – Submandibular nodes

Lateral 2/3rd – Superficial preauricular and then into the deeper cervical nodes.

NERVE SUPPLY:

Upper eyelid: infratrochlear, supratrochlear, supra orbital and lacrimal nerves from ophthalmic division of trigeminal nerve.

Lower eyelid: infratrochlear nerve medially and infra orbital nerve laterally.

Motor Supply

Levator palpebrae superioris – Oculomotor nerve

Orbicularis oculi – Facial nerve

Muller's muscle – Sympathetic nerves.

FUNCTIONS OF THE EYELID

1. Protection of the eye: This is done by

- The sensory function of the cilia
- Spontaneous and reflex blinking
- Secretion of the glands of the lids.

2. Maintenance of the integrity of the corneal surface and its thin layer of tears by the blinking action of the lids forming a smooth surface of high optical quality. Hence any abnormality in the position, shape of the lid or its margins lead to problems with the tear meniscus stability and integrity of the ocular surface.

3. Maintenance of proper position of the globe within the orbital contents.

4. The lids can also transiently affect the I.O.P.

5. Regulation of the amount of light allowed to enter the eye.

REVIEW OF LITERATURE

ECTROPION

Ectropion is the eversion of eyelid margin away from the globe. It is less common in upper lid but more common in the lower lid.

ECTROPION – CLASSIFICATION

Ectropion can be classified into 4 main types.

1. Involutional
2. Cicatricial
   - Generalised
   - Linear
3. Paralytic
4. Mechanical

PATHOGENESIS

The pathogenetic factors leading to the above said 4 types of ectropion are the following.

- Horizontal Lid Laxity
- Medial Canthal Tendon Laxity

•Punctal Malposition

•Vertical Tightness Of Skin

•Orbicularis Paresis

•Lower Eyelid Retractors Disinsertion

•Mechanical

CLINICAL FEATURES

Patients present with symptoms of dry eye with reflex tearing. Conjunctiva appears inflamed and metaplastic.The punctum is exposed outside and becomes stenotic over a period of time. Hence overflow of tears occurs resulting in epiphora. Ectropion also leads to corneal exposure and keratitis.

EVALUATION :

Evalution of the patient with ectropion can be done by the following methods.

1. Assessment of lid laxity

•Strip of tape

•Anterior traction producing more than 10-12 mm (Normal 2-3)

•Snap back test

2. Assessment of lid retractors dehiscence

•Deep inferior fornix

•Strip of white line in inferior fornix

3. Assessment of dehiscence between anterior and posterior lamella

Biomicroscopy and staining

SLIT LAMP EXAMINATION:

The position of the punctum is to be evaluated in the slit lamp examination. The amount of eversion of the punctum and the distance to which it can be pulled laterally is to be estimated. The appearance of the conjunctiva, whether it is inflammed or has become metaplastic is noted. The extent of corneal exposure keratitis is also observed**.**

CLINICAL PATTERNS OF ECTROPION

INVOLUTIONAL ECTROPION:

Involutional ectropion occurs as a result of tissue relaxation, with horizontal eyelid laxity usually in the medial or lateral canthal tendons. If untreated, it usually leads to loss of eyelid apposition to the globe with

eversion of the eyelid margin. Chronic conjunctival inflammation with hypertrophy and keratinization results.

Involutional ectropion usually occurs in the lower eyelid, probably because of the added effects of gravity on a horizontally lax lower eyelid. Horizontal laxity of the eyelid caused by disinsertion or stretching of the inferior limbs of the canthal tendons, especially laterally, is a common feature in most cases of involutional ectropion.

PARALYTIC ECTROPION:

Paralytic ectropion usually follows temporary or permanent seventh nerve paralysis or palsy. Concomitant upper eyelid lagophthalmos is usually present secondary to paralytic upper eyelid orbicularis dysfunction. Poor blinking and eyelid closure lead to chronic ocular surface irritation resulting from inferior corneal exposure together with poor tear film replenishment and distribution. Chronically stimulated reflex secretors (main or accessory lacrimal glands) along with atonic eyelids account for the frequent complaint of tearing in these patients. Eyelid excursion during the blink cycle is further

limited in the setting of vertical eyelid shortening or Graves ophthalmopathy with eyelid retraction or proptosis.

Neurologic evaluation may be indicated to determine the cause of the seventh nerve paralysis. In cases resulting from stroke or intracranial surgery, clinical evaluation of corneal sensation is indicated because neurotrophic keratitis combined with paralytic lagophthalmos leads to extreme corneal exposure and early corneal decompensation.

CICATRICIAL ECTROPION:

Cicatricial ectropion of the upper or lower eyelid may occur secondary to thermal or chemical burns, mechanical trauma, surgical trauma, chronic actinic skin damage. It can also be caused by chronic inflammation of the eyelid from dermatologic conditions such as rosecea, atopic dermatitis, eczematoid dermatitis, or herpes zoster infections. Treatment of the underlying etiology along with conservative medical protection of the cornea is essential as the primary management.

MECHANICAL ECTROPION:

Mechanical ectropion is usually caused by the effect of gravity on bulky tumors of the eyelid. Fluid accumulation, herniated orbital fat, or poorly fitted spectacles may also provide a mechanical component for lower eyelid ectropion.

CONGENITAL ECTROPION:

In rare cases, congenital ectropion occurs as an isolated finding, but it is more often associated with blepharophimosis syndrome. It is caused by a vertical insufficiency of the anterior lamella of the eyelid and, if severe, may give rise to chronic epiphora and exposure keratitis. Mild congenital ectropion usually requires no treatment. If it is severe and symptomatic, it is treated like a cicatricial ectropion, with horizontal tightening of the lateral canthal tendon and vertical lengthening of the anterior lamella using a full-thickness skin graft.

A complete eversion of the upper eyelids is occasionally seen in newborn. Topical lubrication and short-term patching of both eyes is often

curative. Full-thickness sutures or a temporary tarsorrhaphy may be necessary. Etiologies may include inclusion conjunctivitis, anterior lamellar inflammation or shortage or Downs syndrome.

EPIBLEPHARON:

In epiblepharon the pretarsal muscle and skin ride above the eyelid margin to form a horizontal fold of tissue that causes the cilia to assume a vertical position. The eyelid margin, therefore, is in normal position with respect to the globe. Epiblepharon is most commonly seen in Asian children.

Clinically, the cilia often do not touch the cornea except in downgaze. Epiblepharon usually requires no treatment, since it tends to disappear with the maturation of the facial bones, and the lashes rarely cause corneal staining. However, epiblepharon may occasionally result in keratitis; in that case, the excess skin and muscle fold should be excised just inferior to the eyelid margin (in the case of the lower eyelid) and the skin edges approximated.

SURGICAL PRINCIPLES:

HORIZONTAL LID LAXITY

Horizontal lid laxity is mainly due to the canthal tendon lengthening rather than the tarsal plate weakening. This causes a redundancy of the lid tissue. This can be corrected by many methods and involves full thickness excision of a wedge of the eyelid. But in this procedure we are not correcting the pathology or the lateral canthal deformity.

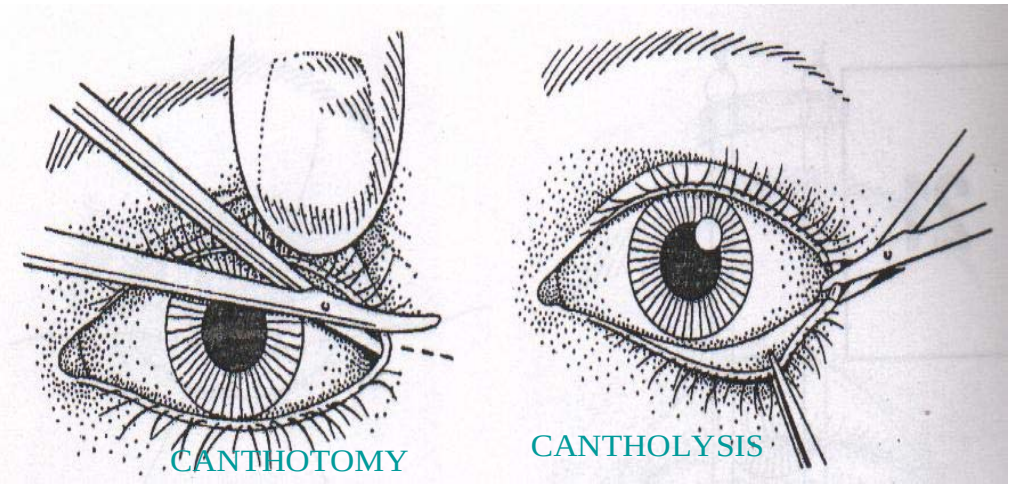
LATERAL STRIP PROCEDURE:

The lateral strip procedure involves shortening of the eyelid at the lateral canthal end. This corrects the anatomical defect. The canthal malposition and shortening may be corrected simultaneously. The canthal angle shape is not altered. The procedure is easy and quick to perform. It is also useful in the management of anophthalmic socket and fitting of ocular prosthesis.

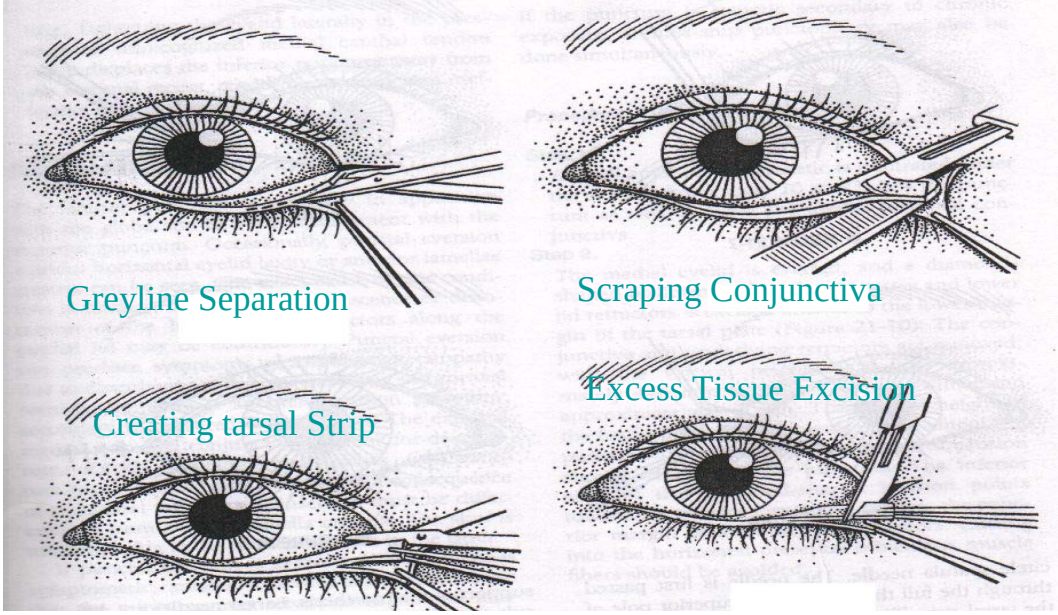
Basic Steps

Lateral canthotomy is done till the lateral orbital rim is exposed. Lateral cantholysis is also done. Then the eyelid is separated along the grey line.

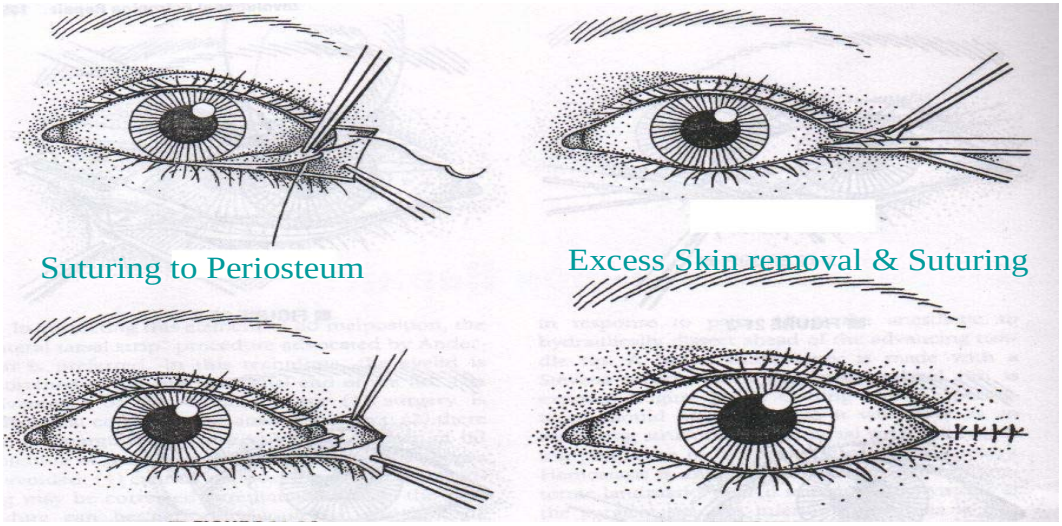
CANTHOTOMY-CANTHOLYSIS



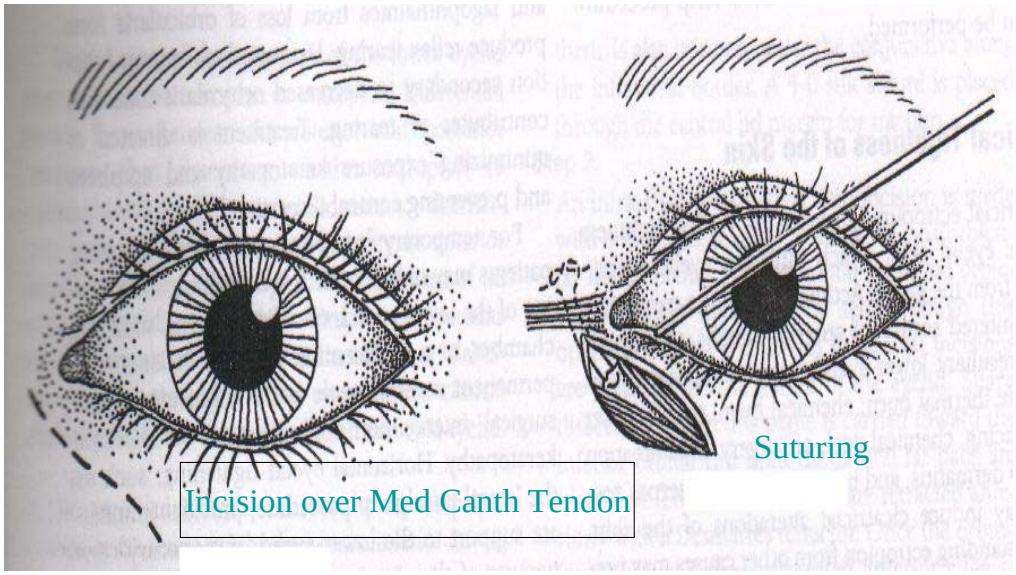
HARVESTING TARSAL STRIP



SUTURING



MEDIAL CANTHOPLASTY



An inferior cut is made horizontal to the above insicion. Excess conjunctiva is removed. After assessing the redundancy excess tissue is removed and the tarsal strip is sutured to the periosteum. The lash bearing anterior lamella is excised and skin sutured.

PUNCTAL MALPOSITION

Punctal malposition can exist alone or along with ectropion. This is due to the segmental dehiscence of the lower lid retractors along the medial aspect of the lid. The common symptoms with punctal malposition is epiphora due to the stenosis of the punctum. This can be treated by medial spindle procedure. If the punctum is found to be stenotic a 3 snip punctoplasty can be tried.

MEDIAL CANTHAL TENDON LAXITY

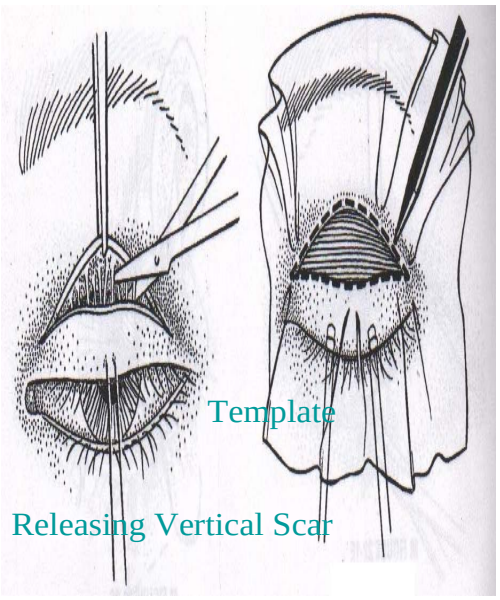
Medial canthal tendon laxity can be detected by lateral displacement of the lower punctum. It usually coexists with lateral canthal tendon laxity. Medial canthal tendon laxity should be repaired when it is not aligned with the upper punctum and this can be treated by medial canthal tendon plication.

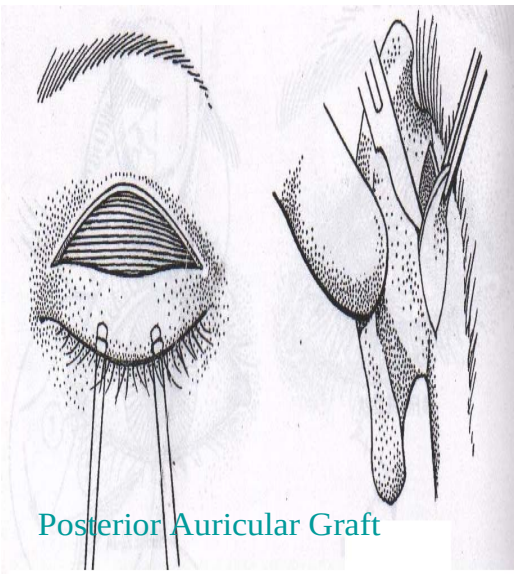
VERTICAL TIGHTNESS OF THE SKIN

The common causes for the vertical tightness of the skin over the face are actinic damage, burns,trauma,laser resurfacing,chemical peel or surgery.

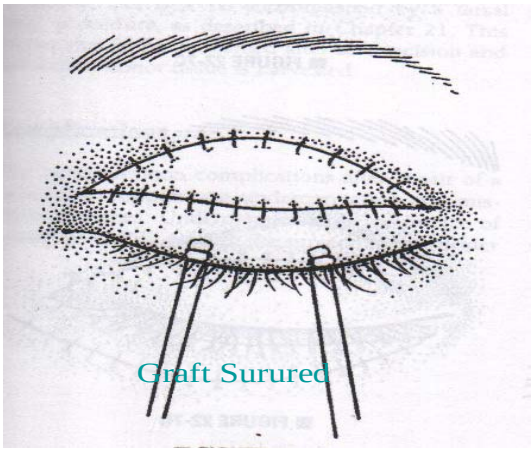
SKIN GRAFT FOR CICATRICIAL ENTROPION AND ECTROPION

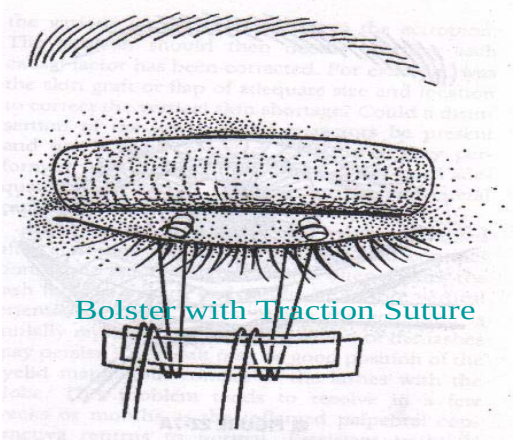
SKIN GRAFT





SKIN GRAFT





If the tightness is due to a vertical or linear scar,then z-plasty can be attempted. If there is a diffuse contracture then a full thickness skin graft can be attempted.

DIFFUSE FULL THICKNESS CONTRACTURE

The surgical procedures for diffuse contracture are skin graft and skin-muscle flap technique. When the contracture is associated with lid laxity then repair of laxity is performed after scar incision and before the donor tissue is harvested.

LOWER EYELID RETRACTORS DISINSERTION

The lower lid retractors disinsertion can manifest either as entropion or ectropion. It is the differential vector forces which decide whether the manifestation will be an ectropion or entropion. It is difficult to diagnose lower eye lid retractors disinsertion in the absence of horizontal lid laxity/anterior lamella shortage.

Diagnosis

The clinical signs to diagnose lower eyelid retractors disinsertion are.

1. Deep inferior fornix
2. High resting lower lid position

3. Diminished lower eyelid excursion on downgaze

4. Horizontal infratarsal red band which is not a useful sign.

Management:

Management of lower lid retractor dehiscence can be done by a transconjunctival approach. Here we unite the lower lid retractors to the tarsal plate and produce an inflammatory cicatrix which pulls and produces the inward rotation of lid margin.

PARALYTIC ECTROPION

Management for paralytic ectropion is done to maintain the lid position, to facilitate lid closure, to protect the cornea from exposure and to control the symptoms such as epiphora and discomfort.

The medical management for paralytic ectropion are the following

1. Lubricants
2. Eye cover
3. Botulinum toxin injection
4. Taping the lower eyelid to pull it up and laterally.

The surgical procedures for paralytic ectropion are the following

1.Tarsorrhaphy

2.Gold weight insertion

3.Medial and lateral canthoplasty

4.Lateral strip

5.Brow lift

6.Facial reinnervation,reanimation

7.Temporalis muscle transplant

Tarsorrhaphies can be performed either medially or laterally. An adequate temporary tarsorrhaphy (1-3weeks) can be achieved with nonabsorbable suture placement between the upper and lower eyelid margins without disruption of the eyelid epithelium. A permanent tarsorrhaphy requires careful removal of the epithelium along the upper and lower eyelid margins. The surgeon should exercise caution to avoid the lash follicles. Next, absorbable sutures are placed to unite the raw surface of the upper and lower eyelids.

Occasionally, a facial lata or silicon suspension sling of the lower eyelid may be indicated. Lower eyelid vertical elevation may be useful in reducing exposure of the lower one third of the cornea. This elevation may be accomplished through inferior retractor muscle recession combined with full-thickness hard palate mucosal graft or ear cartilage graft.

A resurgence of interest in using gold weight loading of the upper eyelid in paralytic lagophthalmos has occurred over the past several years. The appropriate gold weight size is selected by preoperatively taping various sizes of weights to the upper eyelid skin to determine which one best achieves adequate relaxed eyelid closure while limiting eyelid ptosis in primary gaze. A standard upper eyelid incision is made through skin and orbicularis muscle. The gold weight is then sutured to the anterior surface of the tarsal plate. The gold weight implant (average 0.8 – 1.6g) reduces but does not usually eliminate lagophthalmos and corneal exposure. Implanted eyelid springs to provide dynamic eyelid closure are infrequently used because of limited long-term success.

ENTROPION

Entropion is the primary abnormality of eyelid margin where the lid margin is turned inwards. The types of Entropion are

- Congenital Entropion
- Involutional Entropion
- Cicatricial Entropion
- Spastic Entropion

Of the above, involutional entropion is the most common.

PATHOGENESIS:

The pathogenesis for involutional entropion, is horizontal lid laxity, over riding of preseptal over pre tarsal orbicularis oculi and lower lid retractor dehiscence. The pathogenesis for cicatricial entropion is shortening of posterior lamella due to formation of scar following chemical burns, trauma, trachoma, chronic eyelid infections and conjunctival shrinkage disorders.

PATHOPHYSIOLOGY

The common forces acting on the lids are from medial to lateral, up to down and anteroposterior. In involutional entropion there is dehiscence of the lower lid retractors alone or in combination with horizontal lid laxity
producing loose attachment of orbicularis with tarsal plate. If there is overriding the result will be an entropion. In cicatricial entropion there is posterior lamella shrinkage.

CLINICAL FEATURES

Patient presents with symptoms of dry eye with reflex tearing. Conjunctiva appears inflamed. It can also lead to keratitis.

EVALUATION

Evaluation of the patient with entropion can be done by the following methods.

1. Assessment of lid laxity

•Strip of tape

•Anterior traction producing more than 10-12 mm (Normal 2-3)

•Snap back test

2. Assessment of lid retractors dehiscence

•Deep inferior fornix

•Strip of white line in inferior fornix

3. Assessment of dehiscence between anterior and posterior lamellae

Biomicroscopy and staining

CLINICAL PATTERNS OF ENTROPION

CONGENITAL ENTROPION

In distinction to epiblepharon, eyelid margin inversion is present in congenital entropion. Developmental factors that lead to this rare condition include lower eyelid retractor dysgenesis, structural defects in the tarsal plate,

and relative shortening of the posterior lamella. Congenital entropion often does not improve spontaneously and may require surgical correction.

Tarsal kink of the upper eyelid is an unusual form of congenital entropion. It may be repaired by incision of the kink combined with a marginal rotation.

INVOLUTIONAL ENTROPION:

Involutional entropion is usually associated with the lower eyelids. The factors alone or in combination, thought to play a role in the development of involutional entropion are horizontal laxity of the eyelid, attenuation or disinsertion of eyelid retractors and overriding of the preseptal orbicularis. Horizontal laxity can be detected by a poor tone of the eyelid (snapback test) and ability to pull the eyelid more than 6 mm from the globe. Such laxity is a result of involutional stretching of the medial and lateral canthal tendons.

Normally, the lower eyelid retractors maintain the lower eyelid margin in proper orientation. However, attenuation of the eyelid retractors (capsulopalpebral fascia and inferior tarsal muscle) in the lower eyelids

allows the inferior border of the tarsus to ride forward and superiorly with eyelid margin rotating inward.

Superior migration of the preseptal orbicularis is detected by observation of the preseptal orbicularis as the patient squeezes his or her eyes closed after the entropic eyelid has been placed in its normal position (overriding orbicularis). Involutional changes in the orbital soft tissues may also contribute to involutional entropion by reducing the lower eyelid posterior support.

SPASTIC ENTROPION:

This condition follows ocular irritation or inflammation. It is most frequently seen following intraocular surgery in a patient who had unrecognized or mild involutional eyelid changes preoperatively. Sustained eyelid orbicularis muscle contraction causes inward rotation of the eyelid margin. A cycle of increasing entropion caused by corneal irritation secondary to the preexisting entropion perpetuates the problem. The acute entropion usually resolves when the irritation/entropion cycle is broke by treatment of both the underlying cause and the entropion.

Taping of the inturned eyelid to evert the margin, cautery, or various suture techniques afford temporary relief for most patients. However, because underlying involutional changes are usually present in the eyelid, additional definitive surgical repair may be needed to permanently correct the entropion. In selected cases, botulinum toxin type A (Botox) can be used to paralyse the overriding preseptal orbicularis muscle.

CICATRICIAL ENTROPION:

Cicatricial entropion is caused by vertical tarsoconjunctival contracture and internal rotation of the eyelid margin with resulting irritation of the globe from inturned cilia or the keratinized eyelid margin. A variety of conditions may lead to cicatricial entropion, including autoimmune (cicatricial pemphigoid), inflammatory (Stevens-Johnson syndrome), infectious (trachoma, herpes zoster), surgical (enucleation, posterior-approach ptosis correction), and traumatic (thermal or chemical burns, scaring). The chronic use of topical glaucoma medications, especially miotics, may causes chronic conjunctivitis with vertical conjunctival shortening and secondary cicatricial entropion.

The patient’s history along with a simple diagnostic test (the digital eversion test) will usually distinguish) cicatricial entropion from involutional entropion. Digital eyelid traction to attempt to return the eyelid to a normal anatomical position will correct the abnormal margin position in involutional entropion but not in cicatricial entropion. Inspection of the posterior aspect of the eyelid will reveal subtle to severe scarring of the tarsal conjunctiva in cases of cicatricial entropion.

Effectiveness of treatment in cicatricial entropion depends primarily on cause and severity. When caused by autoimmune or inflammatory disease, prognosis is guarded because of frequent disease progression. When caused by prior surgery or trauma, prognosis is generally good because the process tends to be localized and reversible. Infectious etiologies fall somewhere in between.

Successful management of cicatricial entropion depends on thoughtful preoperative evaluation to determine the etiology, severity, and prominent features in each patient. The goal of treatment is to eliminate the chronic

ocular irritation by removing the lashes and keratinized tissue from contact with the cornea. Cicatricial entropion usually requires surgery, but lubricating drops and ointments, barriers to symblepharon formation, and cryotherapy are sometimes useful adjuncts. Indeed surgery is contraindicated during the acute phase of autoimmune diseases, and topical and systemic medication are more appropriate until the disease stabilizes.

TREATMENT OPTIONS

The principles behind the correction of entropion include the following.

1. Directly correct the horizontal lid laxity or lowerlid retractor dehiscence or combined approach.
2. Sutures or cautery to produce cicatricial barrier between anterior and posterior lamellae
3. Resecting preseptal orbicularis
4. Lengthening of posterior lamella

WEIS PROCEDURE

Weis Transverse Tarsotomy (transverse lid split with everting sutures)

PRINCIPLE

To produce scar between anterior and posterior lamellae and prevent overriding of the pretarsal orbicularis over the tarsal plate and also reattaches the lid retractors.

QUICKERTS PROCEDURE

Quickerts procedure involves passing of three double armed 5-0 chromic catgut from the inferior fornix, grabbing the conjunctiva and the lower lid retractor and bringing just below inferior border of tarsus to the orbicularis to emerge 3-4 mm below the lower lid cilia. It is mainly done has a temporary procedure for patients not fit for permanent procedures.

LOWER EYELID RETRACTOR TIGHTENING

This is a more physiological approach and addresses the pathology under direct visualization. Here the skin and muscle are incised 5-6 mm below lashline in the lateral 2/3 rd. Pass the sutures 2 or 3 mm from lower skin edge to the retractors 7-8 mm below inferior tarsal border passed to the lower tarsal border and then to the skin. This procedure directly addresses the problem and creates a cicatricial barrier but the disadvantages are a visible scar and ectropion if horizontal lid laxity is not addressed.

LATERAL CANTHOPLASTY

This procedure involves the combined horizontal shortening and tightening of the lower lid retractors in the existing lid crease. The principle is to detach the lower lid from the lateral orbital rim, shorten it and then reattach it thereby tightening the marginal sling and retractor complex.

COMBINED PROCEDURE

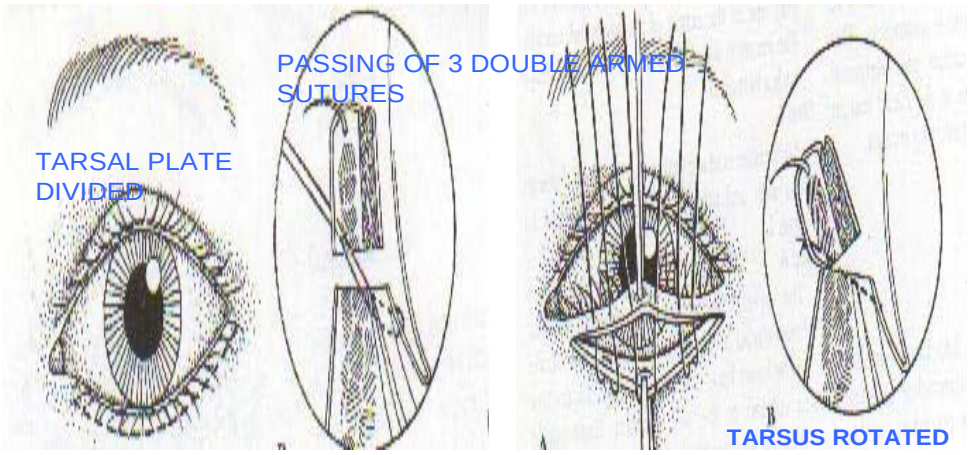
This involves the reattachment of the lower lid retractors and tightening of the marginal sling. The skin incision is made 2 mm below lashes from just temporal to punctum to lateral canthus and angling down. After undermining pretarsal and preseptal, 5mm wide muscle 20 mm long is removed. The orbital septum is opened below the inferior margin of the tarsal plate. Lower lid retractors are identified. Lateral canthotomy and inferior cantholysis is done. After lateral strip is done lower lid retractors are attached to inferior tarsal border. Finally skin flap is trimmed and canthoplasty done.

CICATRICIAL ENTROPION

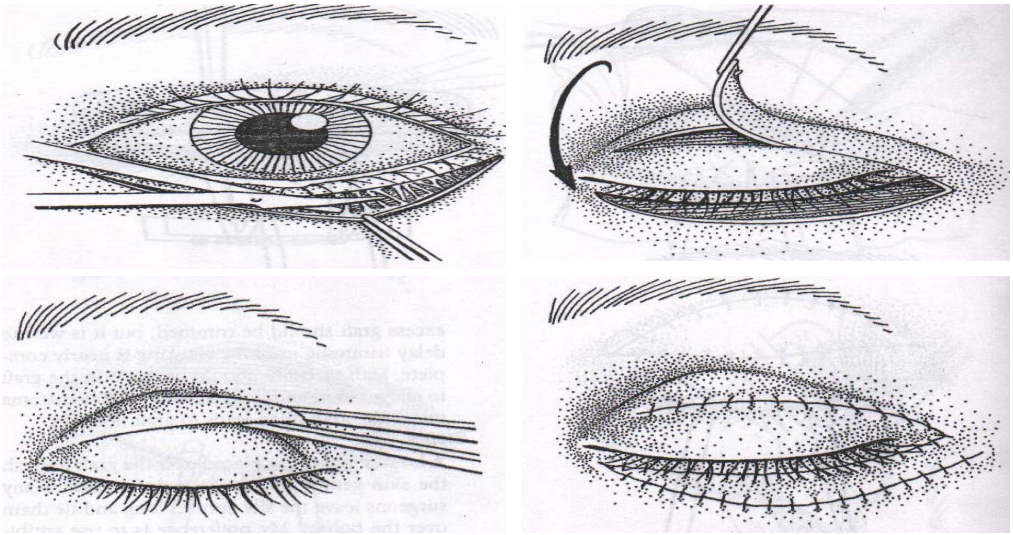
The surgical procedures for cicatricial entropion are tarsal fracturing and mucous membrane grafts from Buccal, Palate, Ear Cartilage, Nasal Cartilage & Sclera.

SURGICAL PROCEDURES FOR ENTROPION

TARSAL ROTATION



SKIN-MUSCLE FLAP



Tarsal Fracture - Procedure: Place a 4/0 stay suture in the tarsal plate close to the centre of the posterior lid margin. Evert the lid over a Desmarres retractor and make a full thickness incision along the middle of the tarsal plate for its whole length. Deepen the incision through the full thickness of the tarsal plate to expose the posterior surface of the pretarsal muscle. Pass three double-armed 4/0 catgut sutures through the conjunctiva and lower lid retractor layer and attach to the proximal strip of tarsus in the inferior wound edge. Pass the sutures through the tissues anterior to the distal strip of tarsus to emerge 1-2mm below the lashes. Tie the sutures to overcorrect the entropion. Remove them at 14 days. If a marked overcorrection persists for more than a week remove one or more of the everting sutures.

PART – II

AIM OF THE STUDY

The Aim is:

1. To analyse the incidence of different types of ectropion and entropion

2. To analyse the various clinical presentations of ectropion and entropion

3. To analyse the various surgical procedures and also to find out the procedures which can be easily performed even by a general ophthalmologist in the correction of ectropion and entropion.

4. To assess the outcome of surgical repair of ectropion and entropion

MATERIALS AND METHODS

This study was conducted at the Regional Institute of Ophthalmology and Govt. Ophthalmic Hospital, Egmore, Chennai from Jan 2005 to March 2006 for a period of 15 months. The patients presenting to the OPD with ectropion and entropion especially needing the surgical repair were taken up for the study.

Inclusion Criteria:

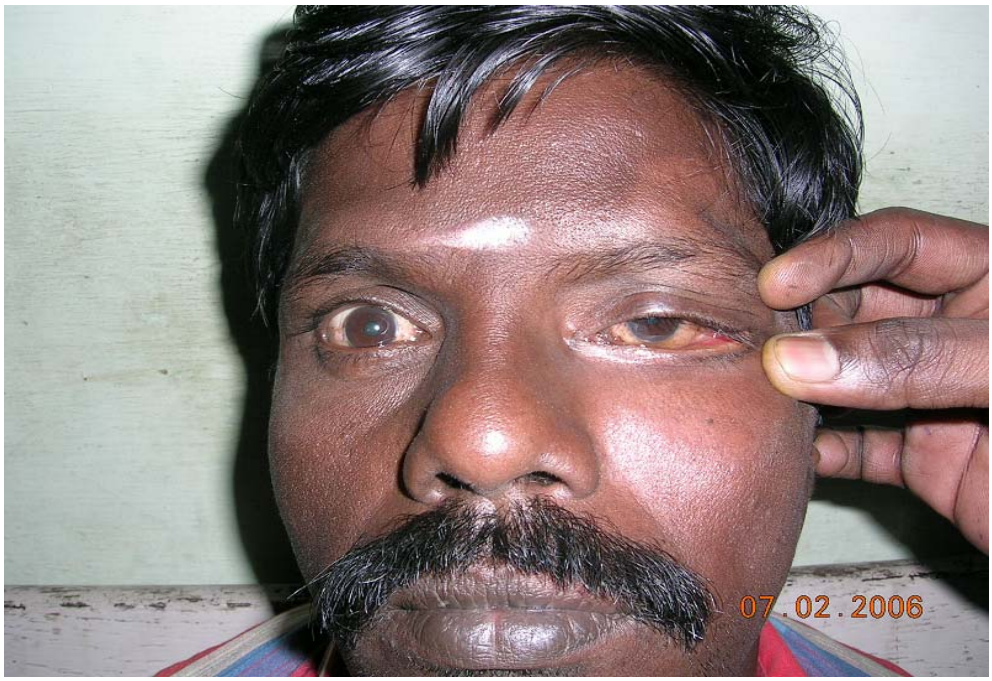
1. Various clinical patterns of ectropion and entropion.
2. Presentation with trichiasis and distichiasis.

PATIENT EVALUATION:

Detailed history regarding the age and mode of onset of the ectropion and entropion was obtained. Any history of trauma, surgery, injury with burns or chemicals should be obtained to investigate and treat cicatricial ectropion and entropion. Any history of swelling in the lids both upper and lower lid will rule out mechanical ectropion. History to eliminate paralytic ectropion should include incomplete closure of the eye lids, inability to chew and blow the mouth.

PATIENT EVALUATION IN ECTROPION AND ENTROPION

HORIZONTAL LID LAXITY



SNAP BACK TEST

DISTRACTION TEST

ENTROPION WITH CORNEAL INVOLVEMENT

Physical Examination:

The patient when presenting at the OPD was examined in detail to rule out the cause of ectropion and entropion. A complete ophthalmic examination was performed on all patients with ectropion and entropion. This includes assessment of visual acuity, motility and pupillary responses, external evaluation and slit lamp bio microscopy.

External Evaluation:

The head posture of the patients, any facial asymmetry, palpebral fissure appearance and height, movement of the extra ocular muscles are noted.

With regard to the upper eye lid any evidence of ptosis which is mechanical in nature is noted. The nature and extent of any scar is also addressed. The contour of the eye lid and any evidence of pigmentation over the eye lid is noted. Any evidence of different clinical patterns of ectropion and entropion are also noted.

With regard to the lower eye lid presence of ectropion and entropion is noted. The position of the punctum whether it is drawn away from the globe or apposed to the globe is noted. The amount of horizontal lid laxity is noted.

The extent of scar is noted, if any cicatricial ectropion and entropion is present. The lower lid retractors weakening are also tested by the snap back test and distraction test. The other ancillary tests are to test for orbicularis muscle action, Bells phenomenon, Schirmer's test, corneal sensation and staining to rule out dry eye and corneal surface irregularities due to entropion. The ectropion and entropion were further classified according to the cause and presentation as involutional, cicatricial, mechanical and congenital. The patients under went the basic investigations such as blood sugar, urine alb. sugar, urine sugar, bleeding time, clotting time, BP checkup. The surgical treatment was planed according to the type of ectropion and entropion.

ANAESTHESIA:

All the adults were operated under local anaesthesia (2% lignocaine) with adrenaline. Most of them were treated as OP patients.

SURGICAL PROCEDURES:

Ectropion:

1. For involutional ectropion lateral strip procedure was commonly performed with skin muscle excision if there was excessive slackness of the tissues.

2. For cicatricial ectropion, the scar was excised in toto and a post auricular graft was placed to cover the raw area.
3. For mechanical ectropion the swelling causing ectropion (viz a chalazion or lid tumour) was removed in toto.
4. For paralytic ectropion also, lateral strip procedure was found to be useful

Entropion:

1. With involutional entropion lateral strip procedure was done for permanent correction. Tarsal plate fracturing was also attempted.
2. For cicatricial entropion a skin grafting was done.

POST OPERATIVE MANAGEMENT:

C.Amoxycillin 500mg tds

Tab.Brufen 400mg bd

Tab.Vitamin-C 500mg od

were given for 5 days. Antibiotic ointment was applied. Patients were examined for the first 2 days. Skin sutures were removed on the 5th day. Bolsters placed for tarsal plate fracturing were removed after 2 weeks and the sutures for skin grafting were removed on the 14th day. The patient was

reviewed every week for 6 weeks and assessed for cosmetic and functional improvement.

OBSERVATION AND DISCUSSION

In our Series out of the 41 cases of ectropion and entropion gender distribution was as follows.

Sex	No. of Cases
Male	**23**
Female	**18**

In this study males were more affected than the females but the difference is insignificant

AGE GROUPS

The incidence of ectropion and entropion in the various age groups

Age	No. of Cases
0 – 10yrs	**1**
10-50yrs	**7**
> 50yrs	**33**

The mean age of the affected person was > 50 yrs.

TYPES OF ECTROPION

INVOLUTIONAL ECTROPION

CICATRICIAL ECTROPION

PARALYTIC ECTROPION

PUNCTAL EVERSION WITH EPIPHORA

TYPES OF ECTROPION:

Involutional	**19**
Cicatricial	**5**
Paralytic	**3**
Mechanical	**2**

Involutional type of ectropion is found to be of common occurrence.

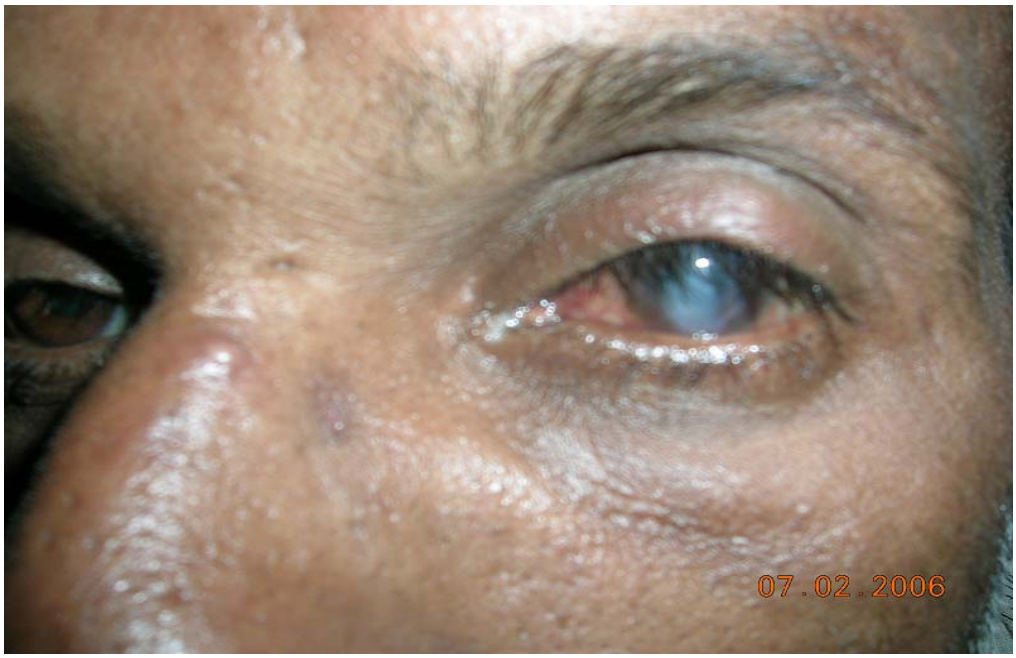
TYPE OF ENTROPION:

Involutional	**9**
Cicatricial	**2**
Congenital	**1**

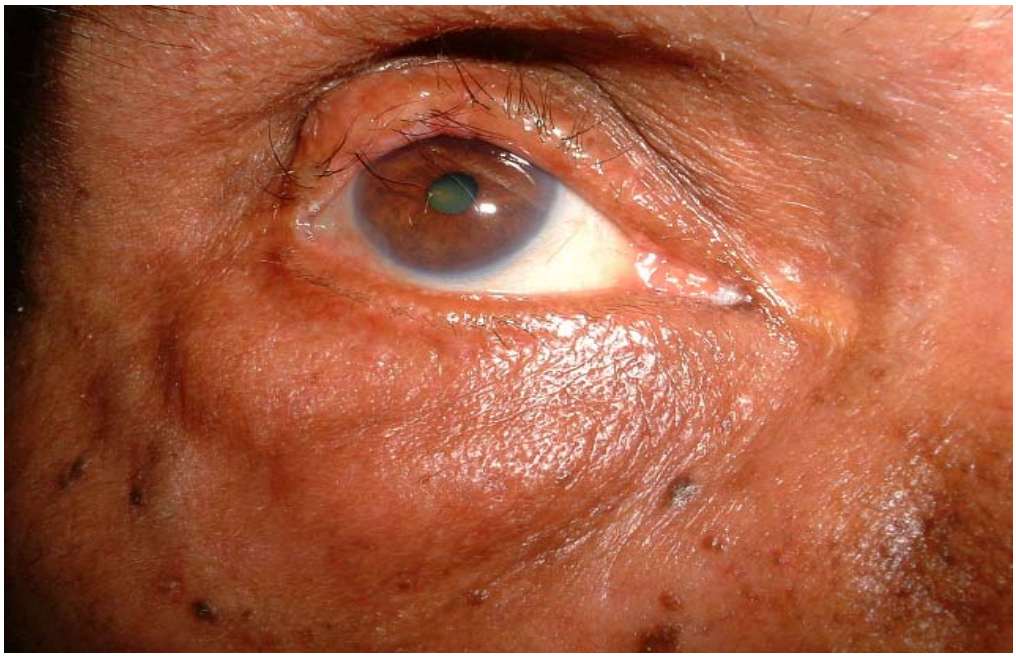
Here also the involutional type of entropion is found to occur more commonly .

TYPES OF ENTROPION

INVOLUTIONAL ENTROPION



CICATRICIAL ENTROPION



EPIBLEPHARON WITH ENTROPION

SKIN AND MUSCLE EXCISION

EYE INVOLVED:

Right Eye	**24**
Left Eye	**13**
Both Eyes	**4**

The right eye is involved in 58% of the cases.

EYE LID INVOLVED:

Upper lid	**10**
Lower Lid	**30**
Both Eyes	**1**

The lower eyelid is involved in 78% of the cases.

OCULAR SYMPTOMS:

Lacrimation, Epiphora	**38**
Corneal Involvement	**5**

TYPE OF SURGERY:

ECTROPION

Lateral Strip Procedure	**19**
Skin Grafting	**5**
Medial Canthoplasty	**3**
Removal of Mechanical cause	**2**

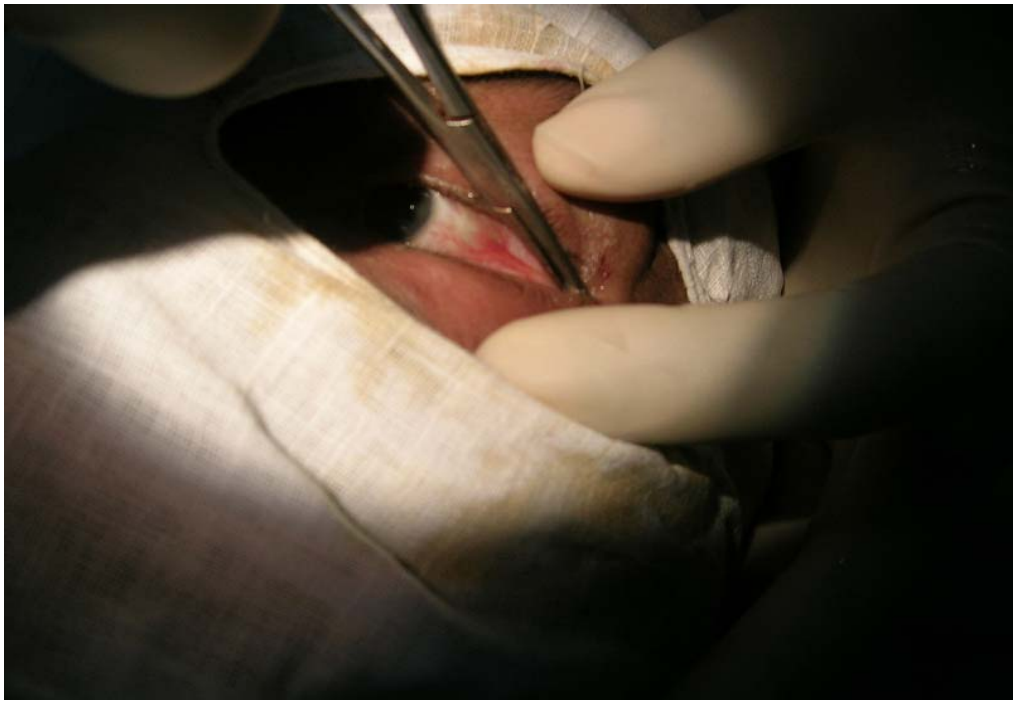
ENTROPION

Lateral Strip Procedure	**8**
Tarsal Plate Fracturing	**9**
Skin Grafting	**6**
Skin Muscle Excision	**2**

Lateral Strip Procedure is the commonly performed procedure for both ectropion and entropion.

LATERAL STRIP PROCEDURE

LATERAL STRIP PROCEDURE (CONT.)



LATERAL STRIP PROCEDURE (CONT.)

LATERAL STRIP PROCEDURE (CONT.)

TARSAL PLATE FRACTURING-PROCEDURE

TARSAL PLATE FRACTURING (CONT.)

CICATRICIAL ECTROPION

POST AURICULAR SKIN

CICATRICIAL ECTROPION – POSTAURICULAR SKIN GRAFTING

AFTER REPAIR

SUMMARY

- Males were involved in 56% of the cases. Females were involved in 44% of the cases.
- 81% of the affected patients were in the age group of > 50yrs. 17% of the affected patients were between 10-50yrs. 2% were < 10yrs
- 72% of the reported cases were ectropion. 28% of the cases were entropion
- The clinical presentation of the ectropion were

Involutional	-	66%
Cicatricial	-	17%
Paralytic	-	10%
Mechanical	-	7%

- With regard to entropion

Involutional	-	75%
Cicatricial	-	16%
Congenital	-	9%

- With regard to the eye involved

  Right Eye - 58.5%

- With regard to eye lid involved

  Lower Lid - 75%

- The commonly performed surgical procedures

  Lateral Strip procedures - 56%

  Skin Grafting - 19.5%

  Tarsal Plate fracturing - 15%

- Complications were not encountered in most of the cases. Only one case developed a mild postoperative infection.

RESULTS AND ANALYSIS

- Out of the different presentations of ectropion, the involutional type was found to be the commonest presentation. The commonly performed surgical procedure for involutional type of ectropion was the lateral strip procedure. The outcome of the surgery was good in almost all the cases.
- In cases presenting with paralytic ectropion, lateral strip procedure was combined with medial canthoplasty, which also had a good surgical outcome. It also addresses the problem of epiphora and exposure keratitis. Tarsorrhaphy which was previously performed did not have a good cosmetic outcome.
- In cicatricial ectropion, excision of the scar with post auricular graft was done. It produced excellent results both in cosmetic and functional outcome.

- In involutional type of entropion of the upper eyelid, tarsal plate fracturing was done. Entropion of the lower lid was corrected by lateral strip procedure.
- In cicatricial entropion, scar excision and post auricular graft was placed.
- Epiblepharon was treated by doing a skin and muscle excision.
- The outcome was good for all patterns of entropion also.

CONCLUSION

- Ectropion and entropion of the lids is more or less equally distributed in both the sex
- Most of the affected patients were above 50 yrs. It shows that involutional type of ectropion and entropion is more common.
- Majority of the reported cases were ectropion in which the involutional type is more common.
- Entropion was less common than ectropion. But here too the involutional type is more common than the cicatricial and the other types.
- The lower eyelid was found to be more involved than the upper eyelid
- Surgical correction for most of the cases of ectropion and entropion can be done as a OPD procedure under local anaesthesia without requiring hospitalization
- Lateral strip procedure was the most commonly performed surgery followed by tarsal plate fracturing and skin grafting.
- Tarsal plate fracturing was done for involutional entropion of the upper lid.
- Cicatricial ectropion and entropion were treated by scar excision and skin grafting.

- Paralytic ectropion was treated by combining lateral strip with medial canthoplasty.
- Cosmetic and functional outcome were satisfactory in majority of the cases following surgical repair. The complications of wound healing are rare due to extreme vascularity of the eyelids.
- These procedures do not need any sophisticated instruments and are also easy to comprehend and perform, that they can be done by a general ophthalmologist any where.

REFERENCES

TEXT BOOKS

1. J.R.O.Collin - A Manual of Systematic Eyelid Surgery, Second Edition, 1999.

2. Adler's Physiology of the Eye, Chapter 1, Ninth Edition, 1992.

3. Snell's Clinical Anatomy of the Eye, Chapter 5, Second Edition, 1998.

4. American Academy of Ophthalmology – Section 7 Orbit, Eyelids and Lacrimal Systems. Chapter 12, 2000 – 2001.

5. Duke Elder's System of Ophthalmology Volume – XIII, Part -1, 1974.

6. Albert's Ophthalmic Surgery – Principles and Techniques - Volume II, Chapter 72, 73 – 1999.

7. A.G. Tyres, J.R.O. Collin - Color Atlas of Ophthalmic Plastic Surgery, Chapter 6, 7 – 1995.

8. Cosmetic and Reconstructive Surgery – Bert Bowden M.D., FACS.

JOURNALS

9. O.Donnell BA. Age related medial ectropion of the lower eyelid. Aust.NZ.J.Ophthamal, 1994, 22, 183 – 6.

10. Anderson R.L. Gordy DD. The tarsal strip procedure. Arch Ophthamal 1997, 97: 2192 – 6.

11. Jones.L.T., Reeh M.J., Senile Entropion Am.J. Ophthalmol 1998, 56: 463 – 9.

12. Anderson R.L, Hat MU, Dixon R. Medial ectropion. A new technique. Arch. Ophthalmol. 1995, 97: 521- 4.

13. Nowinski TS, Anderson RL. The medial spindle procedure for involutional medial ectropion Arch, Ophthalmol, 1996, 103: 1750-53.

14. Tse D.T., Kronish Buus D. Surgical correction of lower eyelid tarsal ectropion by reinsertion of the retractors. Arch. Ophthalmol. 1999, 109: 427 – 31.

15. Collin JRO, Rathbun JE. Involutional entropion. Arch Opthalmol. 1978: 96: 1058-64.

16. Smith B. The lazy T correction of ectropion of the lower punctum. Arch Ophthalmol 1976: 94: 1149-50.

17. Hawes MJ. Dortzback RK. The microscopic anatomy of the lower eyelid retractors. Arch Ophthalmol. 1982: 100: 1313-18.

18. Putterman AM . Ectropion of the lower eyelid secondary to Muller's muscle – capsulopalpebral fascia detachment. Am. J. Ophthalmol. 1978: 85: 814-17.

PROFORMA

Name: Age: Sex:

Address: IP No. Occupation
OP No.

Presenting Complaints

RE / LE/BE – Watering / Redness/Pain/Irritation/

Defective Vision

Mode of Onset – Gradual/ Trauma/Burns/Chemicals

Duration – (Months/Years)

Past History - H/o Surgery / Previous Treatment

DM/HT/Cardiac Disease/Bleeding Tendency/Medication

General Examination – Anemia Pulse

BP CVS/RS/CNS

Local Examination – Head Posture

Facial Asymmetry

Palpebral Fissure

EOM

Anterior Segment

V/A – RE/LE

Upper Lid –	**Right Eye**	**Left Eye**
Eyebrows, Forehead		
Ptosis (Yes/No)		
Lagophthalmos (Yes /No)		
Contour / Scar/Pigmentation		
Scar – Nature / Extent		
Epicanthus		
Lid Movements		
Ectropion /Entropion		
Dry Eye		
Schirmers Test		
Corneal Involvement		

Lower Lid	**Right Eye**	**Left Eye**
Ectropion/Entropion		
Position of Punctum		
Horizontal Lid Laxity		
Lower Lid Retractors		
Scar – Extent		
Any Swelling in the Lower Lid		

Other Tests

Orbicularis Muscle Power

Bells Phenomenon

Schirmers Test

Corneal Sensation

Investigations - Hb BT CT

RBS Urine – alb sugar BP

Diagnosis

Treatment - Medical

Surgical

FOLLOWUP - Cosmetic

Deformity

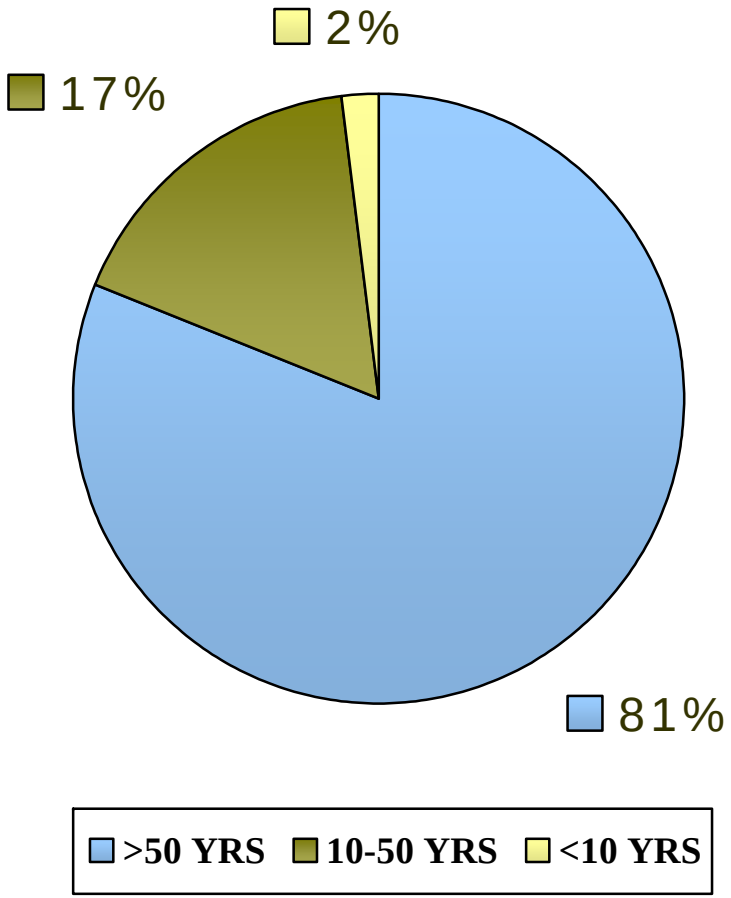
Outcome

KEY TO MASTER CHART

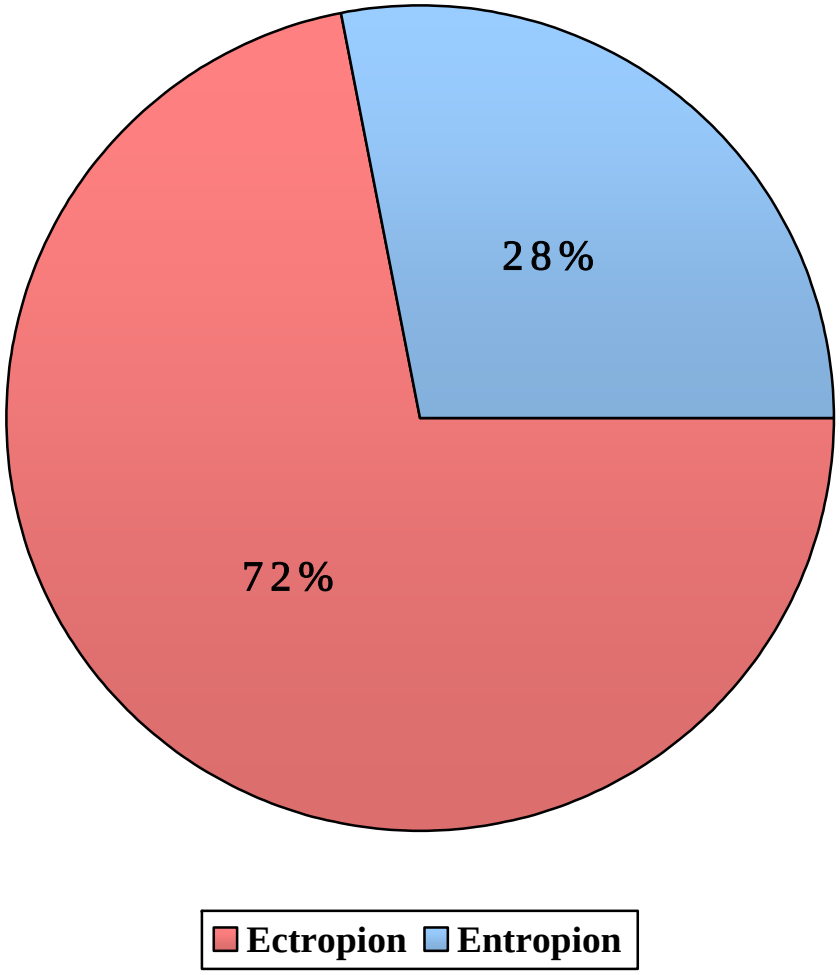
RE	:	Right Eye
LE	:	Left Eye
LL	:	Lower Lid
UL	:	Upper Lid
HLL	:	Horizontal Lid Laxity
I-ECT	:	Involutional Ectropion
P-ECT	:	Paralytic Ectropion
M-ECT	:	Mechanical Ectropion
C-ECT	:	Cicatricial Ectropion
I-ENT	:	Involutional Entropion
C-ENT	:	Cicatricial Entropion
CON-ENT	:	Congenital Entropion
LS	:	Lateral Strip Procedure

TPL	:	Tarsal Plate Fracturing
MC	:	Medial Canthoplasty
SG	:	Skin Grafting
SME	:	Skin Muscle Excision
BCC	:	Basal Cell Carcinoma
I	:	Infection
G	:	Good

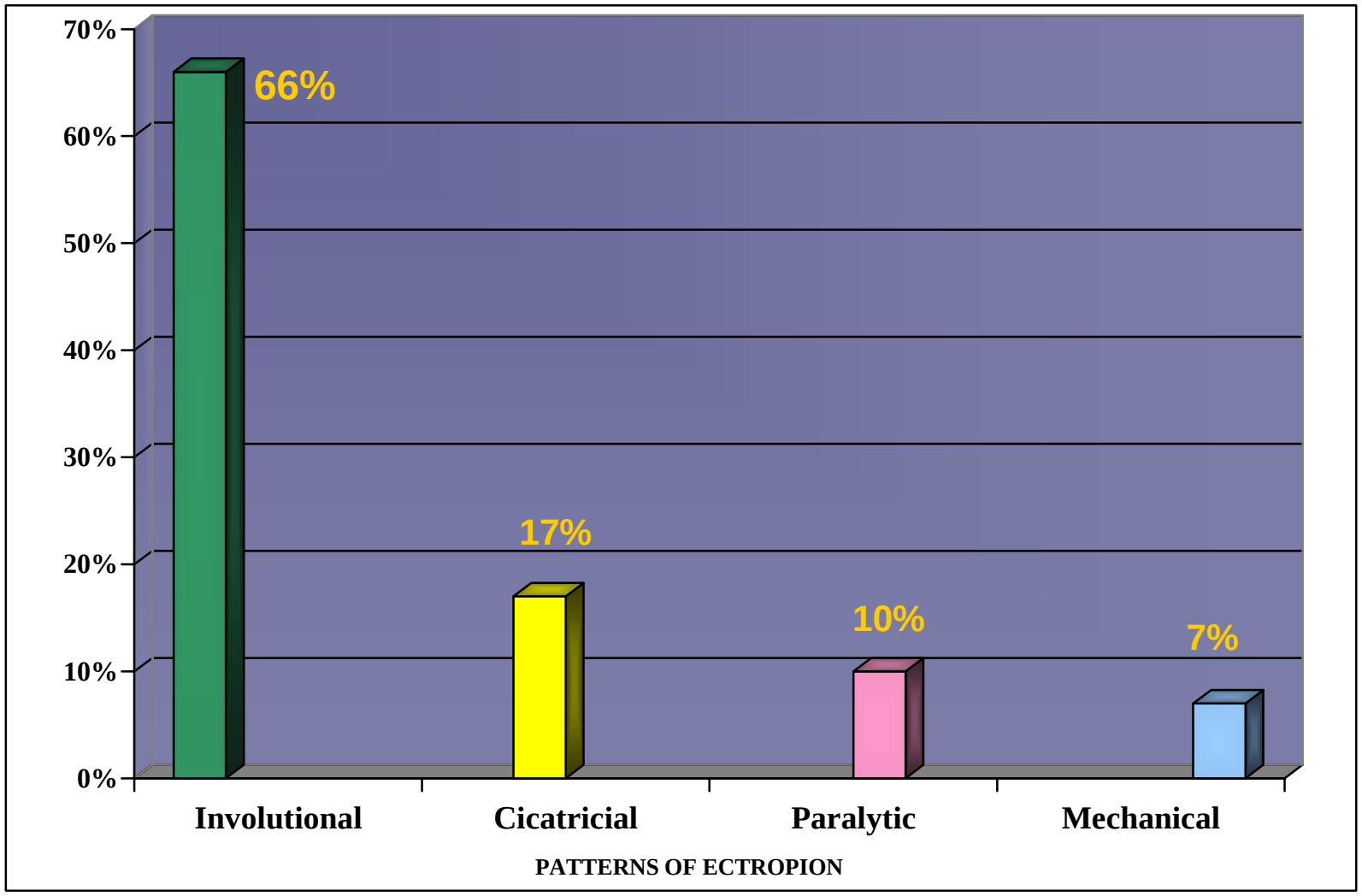
INCIDENCE OF ECTROPION AND ENTROPION IN VARIOUS AGE GROUPS



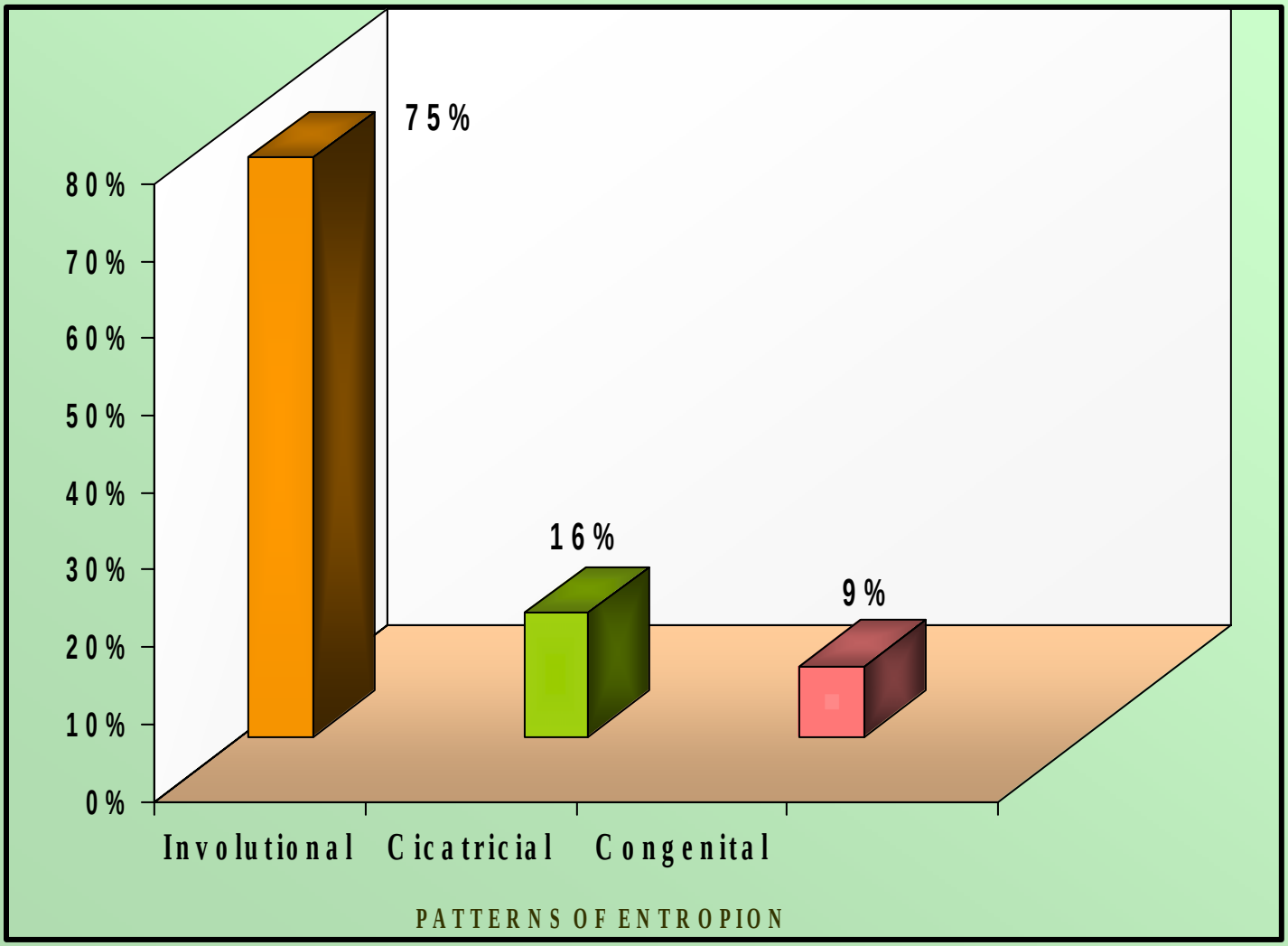
DISTRIBUTION OF ECTROPION AND ENTROPION



DISTRIBUTION OF DIFFERENT PATTERNS OF ECTROPION



DISTRIBUTION OF DIFFERENT PATTERNS OF ENTROPION



MASTER CHART

S.NO	NAME	AGE	I.P/O.P NO.	EYE/LID	ECT/ENT	HLL	Snap Back	Distraction	Scar	Cornea	Schirmers	Surgery	Complication	Outcome
1	Amulu	54	387810	RE-LL	I-ECT	+	+	+				LS	-	G
2	Lakshmi	75	1509	LE-LL	I-ECT	+	+	+		+	+	LS	-	G
3	Gomathi	59	7065	LE-LL	M-ECT							BCC remove	-	G
4	Venugopal	53	388196	RE-LL	I-ECT	+	+	+				LS	-	G
5	Deivanai	50	5817	RE-LL	I-ECT	+	+	+				LS	-	G
6	Perumal	50	12247	LE-LL	I-ECT	+	+	+				LS	-	G
7	Parthudass	28	18592	BE-UL	C-ENT				+	+	+	TPF	-	G
8	Baskar	82	390635	RE-LL	I-ECT	+	+	+				LS	-	G
9	Kantha	75	28514	RE-LL	I-ECT	+	+	+				LS/SME	-	G
10	Padmanaban	32	391026	LE-LL	C-ECT				+			SG	-	G
11	Devaki	66	29664	RE-UL	I-ENT							TPF	-	G
12	Yasodha	60	392053	RE-LL	M-ECT							CR	-	G
13	Narayanaswamy	70	88155	BE-LL	I-ECT	+	+	+				LS/MC	Infection	G
14	Shanmugam	46	393694	RE-UL	C-ECT				+			SG	-	G
15	Lakshmanan	80	52405	RE-UL,LI	I-ENT							LS/TPF	-	G
16	Moosa	64	394104	LE-LL	P-ECT							LS	-	G
17	Munuswamy	93	395387	RE-UL	I-ENT					+	+	TPF	-	G
18	Kadhar	29	391948	RE-UL	C-ENT				+	+	+	TPF	-	G
19	Patchaiammal	60	396341	LE-LL	I-ECT	+	+	+				LS	-	G
20	Deeksha	4	396342	RE-LL	CON-ENT							SME	-	G
21	Pattabhi	67	396283	RE-UL	I-ENT							TPF	-	G
22	Janakiraman	65	14427	BE-LL	I-ECT	+	+	+				LS	-	G
23	Poongodi	34	19248	RE-LL	C-ECT				+			SG	-	G

MASTER CHART

S.NO	NAME	AGE	I.P/O.P NO.	EYE/LID	ECT/ENT	HLL	Snap Back	Distraction	Scar	Cornea	Schirmers	Surgery	Complication	Outcome
24	Arumugammal	72	43401	LE-UL	I-ENT					+	+	TPF/LS	-	G
25	Seetha	38	1401	LE-LL	C-ECT				+			SG/MC	-	G
26	Jayaraman	58	53302	LE-LL	I-ENT							LS	-	G
27	Thukaraman	53	98412	RE-LL	I-ECT	+	+	+				LS/MC	-	G
28	Rajasekar	33	29964	RE-LL	C-ECT				+			SG	-	G
29	Rani	51	398427	RE-LL	I-ECT	+	+	+				LS	-	G
30	Prema	64	2098	RE-LL	I-ENT							LS	-	G
31	Vidyarani	55	29412	RE-LL	I-ECT	+	+	+				LS	-	G
32	Gnanambal	59	391642	LE-LL	I-ECT	+	+	+				LS	-	G
33	Chinnamalai	61	2528	RE-LL	P-ECT							LS	-	G
34	Andal	53	72428	BE-LL	I-ECT	+	+	+				LS	-	G
35	Parthasarathy	66	392142	RE-LL	I-ECT	+	+	+				LS	-	G
36	Ethiraj	57	396824	LE-UL	I-ENT							TPF/LS	-	G
37	Bakiammal	61	5841	RE-LL	I-ECT	+	+	+				LS/SME	-	G
38	Balakrishnan	73	29426	LE-UL	I-ENT							TPF	-	G
39	Gopi	78	394216	LE-LL	P-ECT	+	+	+				LS	-	G
40	Sarojiniammal	85	8249	RE-LL	I-ECT	+	+	+				LS/SME	-	G
41	Rajammal	64	391628	RE-LL	I-ECT	+	+	+				LS	-	G